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ABSTRACT

A group of 50 third garde, 51 sixth grade, and 52 eleventh grade students participated in a study to examine the extent to which good readers at three grade levels expected structures in stories, the nature of their expectations, and developmental similarities and differences in their structural expectations. Materials for the study were prepared by parsing six simple stories into six major parts, using the story structure grammar devised by J. M. Mandler and N. S. Johnson. Each student silently read three stories in each of two task situations--the first asking them to predict what should occur next in a story and the second calling for them to predict a missing node in a story. Four major conclusions were drawn: (1) individuals' responses could be accounted for by the theory that readers do indeed use a set of rules for expecting particular structural elements and sequences of elements in stories: (2) the Mandler and Johnson story grammar could describe average and above average readers' expectations for story structure; (3) developmental differences existed in the extent to which good readers employed a set of expectations for stories, with third graders tending to expect particular structures less frequently than did sixth or eleventh grade students; and (4) students at each grade level appeared to use the same schema. (A summary of major story grammar rules and a copy of a story used in the study are appended.) (FL)

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Readers' Expectations for Story Structures: Another Dimension in Reading Strategy?

Jill Fitzgerald Whaley

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Background

This study was designed as a first step in exploring expansion of a current concept of reading strategy by investigating the nature of individuals' expectations for story structures as a facet of their predictive abilities. Although the phrase "reading strategy" frequently appears in literature on reading, it is seldom defined. During the past few years, Y. Goodman and Burke's (1972) description of reading strategy in the Reading Miscue Inventory Manual may be the main referent for most usages of the phrase. The system they provide for analyzing an individual's reading strategy is based on a predict-test-confirm model of reading (cf., K. Goodman, 1967). As Y. Goodman and Burke operationally define it, reading strategy has to do with an individual's set of expectations for the material and his/her plan or method for selecting syntactic, semantic, and graphophonic language cues from text. Y. Goodman and Burke's method of analyzing a reader's strategy is carried out primarily at the word, phrase, and sentence level.

However, it is likely that a reader's strategy may entail utilization of an array of potential language and print characteristics that is far more vast than those accounted for in Y. Goodman and Burke's system. Recent research in the area of discourse analysis has provided support for the belief that supra-sentential structures and intersentential relationships in text may be analyzed (e.g., Halliday and Hasan, 1976; Kintsch, 1977; Mandler and Johnson, 1977; van Dijk, 1977). A substantial amount of data now supports the contention that factors such as text structure are related to individuals' understanding of and memory for discourse (e.g., Marshall and Glock, 1978-79; Meyer, 1971, 1975; Stein, in press). The accumulation of such evidence may be taken as an

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indication that perhaps other variables such as syntax and semantics of structures of text beyond the sentence level also provide cues that relate to a reader's strategy. Consequently, the concept of reading strategy associated with a predict-test-confirm view of reading comprehension might need to be expanded.

The following tentative and highly simplified definition of reading strategy is used as a point of departure for the present research. It retains the intent of Y. Goodman and Burke's (1972) operational definition, but suggests additional dimensions.

> Reading strategy is the deliberate or automatic cognitive framework, method or plan individuals use for interacting with printed material. Having a method or plan implies that individuals have sets of expectations about certain characteristics of the printed material that may be used:
>
> (1) language characteristics at the word and sentence level,
>
> (a) use of syntax,
>
> (b) use of semantics,
>
> (c) use of phonology;
>
> (2) language characteristics of suprasentential structure;
>
> (3) language characteristics of intersentential relationships;
>
> (4) characteristics of print which are not primarily language related,
>
> (a) use of punctuation and paragraph indentation,
>
> (b) use of various units for span of perception--letter, cluster of letters, word, phrase,
>
> (c) use of differential positions of the unit chosen for focus of perception--beginning, middle or end, and

(d) place of the page used for cue selection.

This definition of reading strategy is viewed by the researcher as an incomplete definition subject to revision and refinement. Indeed, research may not support the belief that all of these characteristics are part of a reader's strategy; also, other characteristics may need to be added.

The ultimate goal of a series of cumulative research studies would be to refine the definition of reading strategy. In the present research, as a first step in the direction of elaboration of the concept of reading strategy, only one potential dimension of reading strategy was examined--readers' expectations for suprasentential structures in stories. Specifically, this study probed the extent to which good readers at three grade levels expect structures in stories, the nature of their expectations, and developmental similarities and differences in structural expectations. Results were compared to findings from studies investigating individuals' utilization of story structures when memory tasks were involved.

Related literature

A review of the literature showed that researchers have not hitherto directly investigated readers' expectations for suprasentential structures in text with the intent of expanding the concept of reading strategy. There is, however, a body of related research in schema theory. A schema is an idealized internal representation of elements and their relations. It may be considered to be then, a kind of cognitive structural representation of something that can be defined as a whole or complete entity. Thus, readers' sets of expectations for suprasentential structures in text might be considered to be schemata.

Researchers in schema theory generally postulate that schemata function in three ways during information processing; they represent sets of expectations about elements and their relations, and they facilitate understanding as well

as remembrance of the discourse or social situation (e.g., Anderson, 1977; Mandler and Johnson, 1977; Stein, in press). Several schema theorists have suggested functional ways in which the schemata used during reading and/or listening may differ from schemata used for remembering text (Anderson, 1977; Mandler, 1978; Mandler and Johnson, 1977; Stein, in press; Thorndyke, 1977). But the stability of a given schema across the three stages of text processing (expectancy, comprehension, and remembering) has only occasionally been the topic of conjecture in schema theory literature. Mandler and Johnson (1977, p. 112), however, do explicitly state: "Although the schemata used to encode a story and to retrieve it are related, we do not assume they are identical." Schemata used for expectations and for comprehension ought to be, according to Mandler and Johnson (1977), more flexible, and they ought to provide more options than those used for recall.

In spite of some speculation about differences in nature and function of schemata across time, there are very little data available to support dissimilarities and/or equivalencies of schemata at different points of information processing. Most schema theory research has addressed the issue of whether or not individuals' responses to specific tasks can be accounted for by schema theory at all; and most studies have utilized memory tasks, making it difficult to determine the locus of the schema's existence--prior to beginning the task, during reception of the stimuli, and/or during retrieval. Of course, when memory tasks are used, inferences may be made about individuals' prior expectations, but a degree of uncertainty is introduced.

With regard to textual material in particular, there is ample evidence to indicate that individuals do use schemata when called upon to <u>understand</u> and <u>remember</u> material (e.g., Frederiksen, 1975; Kintsch, 1977; Mandler, 1978; Mandler and Johnson, 1977; Rumelhart, 1978; Stein, 1976, in press; Stein and

Glenn, in press; Thorndyke, 1977). However, very few researchers have directly investigated individuals' expectations for structural aspects of discourse. Some work, notably that of Anderson and his coworkers, has addressed the factor of expectancy by focusing on the relationship of individuals' perspectives to understanding and/or remembering (Anderson and Pichert, in press; Anderson et al., 1976; Anderson et al., 1978; Brown et al., 1977; Pichert and Anderson, 1977). This research has provided ample evidence that prior orientation affects comprehension and recall in both reading and listening situations, but it does not detail individuals' expectations for parts of texts and sequences of those parts, nor does it supply detailed descriptions of text structures.

Only two investigations were found that purposefully eliminated memory requirements from the study in order to specify individuals' expectations for textual elements and sequences of elements. Stein and Glenn (1977) asked children to construct stories rather than recall them. The data revealed great variability in the structures of stories children constructed, and though Stein and Glenn do not draw this conclusion, there was only modest support for the veracity of the Stein and Glenn story grammar as a representation of children's structural expectancies.

Though not strictly a schema theorist, another researcher, Applebee (1978), analyzed the organization of children's story productions, hypothesizing that children's expectations for structures in stories ". . . are reflected more or less directly in their attempts to tell stories to us" (Applebee, 1978, p. 36). Although he characterized some story conventions and demonstrated that children do expect some paradigmatic story structures, Applebee's work is not an attempt to describe children's expectations for story parts and rules for combining story elements.

Relevant to the present investigation, another important point about the two studies that specifically addressed children's expectations for stories, is that in both cases, the role of structural expectations in relation to reading was not examined. While all language processes may be similar, it is not known to what extent processing of language varies as the mode of presentation differs. With regard to differences between aural and reading conditions for processing structural elements in text, the evidence is especially meager. There is some indication in a few recent studies that structures of passages identical in form are processed differently by listeners and readers (Hildyard, 1979; Olson and Hildyard, in press; Pace, 1979). Pace (1979), for example, found that children who read a story were more aware of information inconsistent with their own knowledge or expectations, than were children who listened to the same story. On the other hand, results from general text grammar studies using reading generally coincide with those using listening. Most story grammar research to date has used listening tasks; but in three cases when reading was involved (Mosenthal, 1978; Rumelhart, 1978; Thorndyke, 1977), results corroborated trends in story grammar research using listening tasks. Until similarities and differences across modes of stimulus presentation are substantiated, generalizations about results should be restricted to the mode used in the particular study.

In summary, then, data from discourse analysis research suggests that at least one additional dimension in reading strategy might be readers' utilization of structural information in texts. One way to conceptualize this dimension is to say that individuals may expect particular structures in texts and that the sets of expectations may be characterized as schemata. There is however, very little research that has addressed the nature and function of schemata specifically as sets of expectations for text. When expectations have

been the focus of studies, the researchers (1) have not attempted to detail expectations for parts of texts and sequences of those parts, and/or (2) have not studied readers' structural expectations.

For developing the concept of reading strategy, it would seem to be vital to verify the possibility that individuals do deploy sets of expectations for structures in texts, to describe constancies and optional variations in expectations for text structures, and to relate individuals' expectations to reading per se. From a broader perspective, there are other reasons why studying schemata as sets of expectations may be significant. One reason is that it is important to verify differences and similarities in schemata used for expectations and those used for memory. Another is that identifying the nature of individuals' expectations for structures in texts may have greater potential than identifying memorial structures, for providing insight into actual reading and listening processes. Empirically validated descriptions of sets of expectations, for example, might be a first step in helping researchers to better understand the interface between prediction strategies and concurrent hearing or reading of words.

The study

The main question

As an initial step in expanding the concept of reading strategy, the present research probed the extent to which readers actually have structural expectations for texts. The major questions addressed in this study were:

(1a) Do individuals use a set of rules for expecting suprasentential structures when reading simple stories?

(1b) Does a story grammar accurately describe expectations for story structures?

(2a) Are there developmental differences in the degree to which individuals employ a suprasentential plan for reading stories?

(2b) Are there developmental differences in the nature of those sets of rules?

The story grammar

In this study, the Mandler and Johnson story grammar (Johnson and Mandler, in press; Mandler and Johnson, 1977) was postulated to represent the set of expectations readers might have for story structures. This grammar was chosen because previous studies investigating structures of memory for studies using recall and summarization tasks have demonstrated its workability. The decision to use the Mandler and Johnson grammar rather than another story grammar was somewhat arbitrary in that other grammars (e.g., Stein and Glenn, in press) have also shown utility in research efforts. A synopsis of the major rules of the grammar is given in Appendix A. Briefly stated, the major story constituents proposed by the grammar are Setting, Beginning (in which some event happens to the protagonist), Reaction (the protagonist's response to the Beginning), Attempt (effort to achieve a goal), Outcome (the success or failure of the Attempt), and Ending.

Subjects

Fifty third graders, 51 sixth graders and 52 eleventh graders from a rural, centralized school district participated in the study. Third and sixth graders were chosen because these grades represent traditionally accepted points of transition in children's academic development. Eleventh graders were arbitrarily chosen to represent high school students, i.e., a third stage in academic development. These three levels would seem to characterize developmental stages in reading--primary level, upper intermediate level, and high school level. A

survey of parents' occupations for the Kindergarten children in this district during the school year 1975-76 revealed sizable representations of diverse occupations.[1]

The third graders were chosen from a sample of randomly selected children participating in an ongoing longitudinal study. The sixth graders were randomly selected, and the high school students were all volunteers from a college preparatory curriculum.

In order to control for possible confounding effects that might have been introduced if some of the children had been unable to read the material, only average and above average readers were selected. Previously administered standardized test scores formed the main basis for determining reading ability level. For third and sixth graders, a grade equivalent score of one year or more above grade level at the time of testing was considered above average. A score within one year of grade level was termed average. Also, for the elementary grade subjects, teachers' judgments about reading ability were used as a second criterion. Grade equivalent scores and percentiles for the high school volunteers were checked to insure that none of the students had reading difficulties. Only one volunteer (whose reading score was at the 37th percentile) was excluded from the study.

Materials

The stories. Materials for this study were formed from six simple stories. One of the stories is presented in Appendix B. Some of the stories were modified folktales; some were self-developed; and some have been used by other researchers. Using the Spache (1974) formula, the readability levels of these stories ranged from 2.4 to 3.5.

To devise materials for the study, each of the six stories was first divided into statements, and then the statements were assigned to story

categories. (Propositional analysis proved to be unnecessarily detailed.) Statements were determined using a specific set of rules devised by the researcher.[2] Briefly, the gist of these rules was to establish that an independent clause together with any attached dependent clauses constituted one statement. A dependent clause could be counted as one statement in the following situation: whenever a dependent clause was to be classified as one type of information during category assignment and the attached independent clause was to be classified as another type of information, each clause counted as separate statements.

Next, using the Mandler and Johnson story grammar, each of the stories was parsed so that the six major story parts were identified in each story. An example of a completed story parsing is shown in Appendix B.

Reliability. Two doctoral students in Reading were trained over a 15 hour period to use the rules for division of stories into statements and to use the Mandler and Johnson grammar. Across all six stories, the inter-rater reliability for determination of statements was .92. Inter-rater reliability for parsing the stories was .95.[3]

Forming the materials. For each story in Task 1, five separate cards were made. On the first card, the title and just the Setting of the story were typed. On the second card were the title, the Setting, and the Beginning of the story. On the third card, there were the title, the Setting, the Beginning, and the Reaction. The Attempt part of the story was added on the fourth card, and the entire story except the Ending was printed on the fifth card.

Each story in Task 2 also was typed on five different cards. The Setting of the story was deleted on the first card. On the remaining cards, the following categories were systematically deleted: card 2, Beginning; card 3, Reaction; card 4, Attempt; card 5, Outcome. Lines of approximate equal lengths were drawn on each card to indicate where information had been deleted.

Procedures

Each student silently read three stories (or parts of stories) in each of two separate types of tasks (for a final total of 6 stories per subject): predicting what should or could occur next in incomplete stories of otherwise canonical form (Task 1) and predicting what information belongs in a missing node in otherwise canonical stories (Task 2). Half of the subjects at each grade level were randomly assigned to do Task 1 first and half did Task 2 first. Five possible story orders were randomly selected for the three stories in each task, and subjects were randomly assigned to one story order for each task. The investigator met with subjects individually, and all students' responses were tape recorded.

Task 1: Prediction of what should occur next in the story. There were five conditions within this type of task. The same three stories were manipulated across all five conditions. In condition A, subjects read three story Settings only; in condition B, the three stories contained a Setting and a Beginning; in condition C, the stories contained a Setting, a Beginning, and a Reaction; the condition D stories consisted of a Setting, a Beginning, a Reaction, and an Attempt; and the condition E stories had all nodes except the Ending. About 10 students from each grade level were randomly assigned to one of the five conditions.

Before reading the first of the three incomplete stories, standard directions were given asking the subject to tell what should or could come next in the story. An attempt was made to establish rapport with each individual, and all subjects were told to ask the examiner for help on any unknown words.

The three stories were then shown to the subject, one at a time. After each story was read silently, the subject told the rest of the story out loud. When the student indicated he was finished or when he appeared to be done, the

examiner said "Anything else?" Occasionally some individuals, especially the third graders, were reluctant to talk. A standard set of prompt questions was used to encourage the subjects to tell what they could about the story. Care was taken to use the prompts only as inducements to talk, not to reinforce particular responses. An example of a prompt question is: I know this may seem silly but I'd like you to try as hard as you can.

Task 2: Prediction of a missing node in a story. In this "macro-cloze" task there were five conditions with three stories in each condition. The same three stories were manipulated across all five conditions. In condition F, subjects read stories that were canonical except that the Settings were deleted. In the remaining four conditions, the Beginning, the Reaction, the Attempt, and the Outcome were each systematically deleted, forming one condition for each type of deletion. About 10 subjects from each grade were randomly assigned to one of the five conditions. Assignment to conditions in Task 2 was independent of assignment to conditions in Task 1.

Again, standard directions were given before the subject read the first of the three incomplete stories. The subject was instructed to tell what should or could fit in the missing part. An attempt was made to put the subject at ease, and to emphasize the importance of asking the investigator for help on any unknown words while reading.

The child then read the three stories. After each story, the subject told a part of the story he thought could fit in the blanks. When the child finished, the examiner said, "Anything else?" During the task, when individuals seemed shy or reticent to talk, a set of nonleading prompt statements was used.

Scoring the protocols

Subjects' tape recorded responses were transcribed. For each of the six stories and for each subject, a score of one, two, or three was awarded. A

score of one indicated "no credit" was given to a response, or equivalently, the information given by the subject did not match the category predicted by the grammar. A score of three meant full credit was awarded, i.e., the subject gave information that corresponded to the category predicted by the grammar. When Reaction information was predicted by the grammar, a score of two (partial credit) could also be given. The Reaction category was scored as follows:

> When a Complex Reaction was indicated, a score of three was given if both the Simple Reaction and the Goal were present. A score of two was given if either the Simple Reaction or the Goal was present. If the Simple Reaction and Goal occurred in reverse order, a score of two was given. If neither was present, the subject received a one.

(There were no instances of Simple Reaction cause Action forms of Development to consider in scoring.)

Only the section of the protocol required for scoring was diagrammed. Information given in the protocol that repeated or paraphrased material the subject read was labeled "redundant" and was ignored during scoring. When information given immediately in the protocol was classified as a continuation of the last node in the reading material, scoring began with the next node in the subject's protocol. Likewise, in the macro-cloze task, when information at the end of the subject's protocol continued or added to the node which followed in the reading material, the information was marked "continuous" and was not used in scoring.

Several problems arose during scoring of protocols that could not be resolved by studying Mandler and Johnson's (1977; Johnson and Mandler, in press) discussions of the grammar. In order to obtain a high degree of consistency in scoring protocols, several additional scoring rules had to be developed. The validity of the results of this study depend in part on the acceptability

of the details of the scoring procedure. In the interest of brevity, however, these details will not be presented here.[4]

Reliability. The same judges trained for parsing the stimulus materials spent about 10 hours learning the scoring rules. Subjects' protocols were selected for scoring for inter-rater agreement by approximating a random sample.

Only the statements needed to make the scoring decision (i.e., to award a score of one, two, or three for a given story) were counted. The inter-rater agreement between the two doctoral students and the investigator for 397 statement divisions in subjects' protocols was .95. The agreement between all three parties for final score assignments for 90 protocols was .92.[5] There was less agreement between raters about exactly which statements constituted the category being scored. For example, the three raters agreed 86 percent of the time on the first statement assigned to a category being scored.

Results and discussion

The main forms of data analyses were examination of proportions of responses that matched the categories suggested by the Mandler and Johnson grammar and repeated measures analysis of variance. Two repeated measures analyses of variance were performed (i.e., one model for each task). Following procedures recommended by Finn and Mattsson (1978), first, tests of compound symmetry were done. These tests revealed that assumptions for univariate models were not met, so multivariate models were employed. The analyses were further complicated in that they were conditional analyses that removed potential overlapping variance in dependent variables.

There were also additional tabulations that complemented the proportion analyses and some other tallies. The questions and analyses were the same for Tasks 1 and 2, and except for one or two minor occasions, the analyses were performed for the two tasks separately. In this section of the report, each

of the original questions of the study will be restated, and the findings from the diverse analyses that are relevant to each question will be delineated.

(1a) Do readers expect particular structures in stories?

Individual's responses could be well accounted for by the theory that readers do indeed use a set of rules for expecting particular structural elements and sequences of elements in simple stories. There was remarkable consistency across Tasks 1 and 2 in results for all analyses, adding strength to the inferences that were drawn.

The main evidence for the contention that readers did tend to expect particular story structures was that for all ages and all conditions except the Reaction condition,[6] there was a high proportion of responses that matched nodes predicted by the grammar. The marginal proportions for conditions for both tasks are given in Table 1.

Insert Table 1 about here.

The constituent marginal proportions in Table 2 show that when the responses in the Reaction condition were broken down into the constituents Simple Reaction and Goal, it appeared that either a Simple Reaction or a Goal was expected with slightly greater frequency, but each constituent was expected about equally often. (No Simple Reaction cause Action phrases were given.)

Insert Table 2 about here.

Complementary analyses also provided evidence that readers did expect particular story structures. All of the responses that were scored were coded to specify the actual category given and to specify some other detailed information about the category given. The various forms of responses specified are

listed in Tables 3 and 4 under the heading "Category Given." The repeated measures analyses of variance revealed story by condition interactions and story differences for both Tasks 1 and 2 that are disregarded in the present discussion; the tallies in Tables 3 and 4 were done across stories. The tallies indicate that the postulated set of rules appeared to be so powerful that when the nodes predicted by the grammar were not given, alternative responses did not tend to be identifiable story categories except in the Reaction condition where people in Task 1 frequently skipped to the Attempt.

Insert Tables 3 and 4 about here.

Other analyses complementary to the proportion analyses indicated that when predicted nodes were not given immediately, they did not tend to be stated later in subjects' protocols. For Task 1, for all responses scored zero, the proportion of times the predicted category was given later was calculated for each condition. (The calculations were not done for Task 2, the macro-cloze task.) Figures were collapsed across grades because the production of predicted categories later in protocols was about equally present over grades for a given condition. In the Reaction condition three eleventh graders and one sixth grader who originally scored zero gave either a Goal or a Simple Reaction later in their protocols. These four subjects are not represented in the proportion figures. The proportions for Beginning, Reaction, Attempt, Outcome, and Ending conditions respectively, were: .05 (1/21), .01 (1/82), .29 (4/14), .22 (2/9), and .25 (2/8).

(1b) Does the Mandler and Johnson story grammar aptly describe readers' expectations for story structures?

Several analyses indicated that the Mandler and Johnson grammar appropriately described readers' expectations. The proportions already discussed

showed that five of the major nodes predicted by the grammar tended to be produced in protocols. Surface statements of Reactions however were rare. (See Tables 1 through 4.)

Some of the findings from the repeated measures analyses of variance were also related to the question of the appropriateness of the grammar as a description of individuals' structural expectations for stories. Specifically these were: significant condition by stories interactions, stories main effects, and condition main effects. Table 5 shows the results of the repeated measures analysis of variance.

Insert Table 5 about here.

Figures 1 and 2 depict the condition by stories interactions for Tasks 1 and 2 respectively. The interactions indicate that readers' expectations for categories depend, to some extent, on the stories being read. They represent, in a sense, a reaffirmation that stories have unique qualities and that human understanding of verbal material is complex. The condition by stories interactions may be compared to person by item interactions in measurement theory. Generally, a sizable effect is anticipated for person by item combinations in measurement procedures, and normally person by item interactions are not interpreted as deleterious to the validity of the measuring instrument. If the story by conditions interactions in this study are likened to person by item interactions in any measurement procedure, they do not detract from support for the theory that, on the average, the grammar represents individuals' expectations.

Insert Figures 1 and 2 about here.

Specification of the unique story qualities producing these interactions would be exceedingly difficult, if not impossible. Ultimate explanations are

likely to involve identification of redundancies and inferences. For example, when redundancies are plentiful in a story and inferences are strong, particular categories might not need to be explicitly stated.

The disordinal nature of these interactions did temper interpretation of both the stories and the condition main effects. As Figures 1 and 2 indicate, an overall difference between stories cannot be stated. Rather, the difference between stories varied depending on the condition to which subjects were assigned.

For conditions, for both tasks, planned contrasts revealed significant differences between the Reaction conditions and all other conditions. (See Table 6.) Inspection of Figures 1 and 2 suggested that only two other comparisons could hold as significant differences across all stories--for Task 1, the Ending-Beginning and Outcome-Beginning differences. A Scheffé test showed neither comparison to be significantly different from zero (ratios = 2.49 and 2.25 respectively; test statistic = 4.89).

Insert Table 6 about here.

Two issues need to be addressed here. One is that the Reaction category was infrequently stated, and the other is related to differential salience of the nodes in readers' expectations.

Logically, it would be difficult to believe that readers do not perceive Reactions and Goals as important story features. The explanation proferred by researchers studying memory (cf., Johnson and Mandler, in press) would be a more adequate explanation for the results of the present study; i.e., typically, redundancies are plentiful in simple stories so that characters' Reactions and Goals can easily be inferred and need not be explicitly stated. In this view, Simple Reactions and Goals are still important structural elements at the underlying or deep structure level.

The revised Mandler and Johnson (Johnson and Mandler, in press) grammar accounts for deletion of Reaction statements from surface structures through a transformational rule permitting deletion when a Beginning is stated immediately prior to the underlying Reaction node. The Beginnings were all explicitly stated in the Reactions conditions in this study, so a test of the transformational rule could not be made. One observation of a trend in the data, however, indicates that some critical redundancies permitting deletion of Reaction statements may also occur in the Attempt node or nodes following the Attempt. Most proportion scores were higher for Task 2 than for Task 1; but Reactions deviate sharply from this trend. (See Tables 1 and 2.) One would expect that proportions for Task 2 might tend to be higher than for Task 1 since the macro-cloze format would be likely to introduce greater constraints on the nature of the material to be supplied by the reader. Why then, would individuals be less likely to supply Reaction information under the more highly constrained situation? One explanation is that, in the macro-cloze task, there must be especially plentiful or potent redundancies occurring in the Attempt node and/or other following nodes.

With regard to the issue of order of importance of the categories in readers' expectations for story structures, these data indicate that the only overall differential saliency for nodes occurred between the Reaction node and all other categories. This finding diverges from results of other studies tapping memory. Although the statistical significance of the node differences was not always reported, four sets of researchers using recall tasks reported similar rank orderings for salience of the nodes (Mandler, 1978; Mandler and Johnson, 1977; Mosenthal, 1978; Stein and Glenn, in press). The rank ordering generally was: Setting, Beginning, Outcome, Attempt, Ending, Reaction.

A direct comparison of changes in story schemata as a set of expectations and as a guide for remembering, is hampered by the fact that the present research used reading, but only one (Mosehthal, 1978) of the previous researchers did so. Some of the apparent change in the structure may be due to differences between reading and listening per se.

Another possible reason for these differences may be related to the fact that only average and above average readers were used in the present research. It is possible that when a broader spectrum of reading ability levels is considered, a pattern of differential salience of nodes would emerge for readers' structural expectations for stories.

The divergent results in the present study are intriguing because they have special potential for lending insight into different functions of schemata for discourse at different points in time. If one could assume some stability of these functions over both listening and reading modes, then the divergent results would suggest that on the average, individuals initially expect all nodes except the Reaction node to be present with equal importance in story structures; but for remembering semantic content of stories, some nodes may differ in importance. In essence, the divergent findings would indicate that the schema may be hierarchical when memory is required; but as a set of expectations, it is not hierarchical (except that Reactions are subordinate to other nodes). These findings would lead to qualification of the general statement sometimes made by theorists (cf., Anderson, 1979) that a schema serves to indicate which elements are more important than others.

There is a plausible interpretation that could account for the changes in structural importance over time, but it would not account for the consistent rank ordering researchers using memory tasks have found. Perhaps as a reader begins a story he has a set of expectations that provides for potentially equal

saliency of all categories of information, except Reactions. While reading, particularly unusual events or remarkable features for different categories in a given story make different nodes more or less important. As particular salient aspects of the story are encountered, the corresponding node in the story schema is tagged so that for recall some nodes will be more important than others.

The main problem with this simple explanation is that it implies that the differential importance of nodes in recall is related to the semantic content of the material read. But the four studies using recall tasks showed fairly consistent orderings of category importance; i.e., their results were consistent across various content selections. Also, some studies using general text grammars have shown that some structural variables affect understanding and/or recall in and of themselves, i.e., regardless of semantic content (cf., Marshall and Glock, 1978-79; Meyer, 1975).

A final point to consider is that although two or more stories were used in each of the previous studies reporting differential salience of nodes, repeated measures analyses were never performed, making it difficult, if not impossible, to assess a stories effect and a condition by stories effect. Thus, previous findings of overall differential saliences of nodes might not actually hold for each of the various stories used.

The validity of the grammar as a representation of readers' expectations for story structures was further supported by two results of the analyses that complemented calculation of proportions that have already been mentioned. When responses predicted by the grammar were not given immediately, they were not frequently given later in the protocols. This supports the contention that the sequence of nodes described by the grammar accurately represents a sequence readers might expect. Also, generally, when responses did not match the predictions made by the grammar, other identifiable categories were not given in

their place, except for the Reaction conditions where readers typically skipped the Reaction category and stated an Attempt. (See Tables 3 and 4.)

A supplementary finding that is relevant to describing the nature of the schema people might use for expecting story structures was that typically readers produced quite simple forms of nodes, i.e., simple statements. (See Tables 3 and 4.) Exceptions to this occurred for Outcomes and Endings, where eleventh graders' responses were split between simpler forms and more complex elaborations such as Episodes and/or Repeated Developments. The degree of complexity expected may not be accurately reflected in the present research, largely because the stories themselves were so simple, and because people, especially younger children, may have been unable to express the complexity they could have expected.

The high inter-rater reliabilities obtained for using the grammar to parse stories and for scoring protocols in this research are also indirectly relevant to the issue of the grammar's validity as a model of readers' expectations for story structure. If the set of rules could not be used consistently by raters and scorers, then logically it would be difficult to accept its validity as a set of rules readers would use with any regularity.

There were two incidental findings in this research that might be further explored in order to more accurately describe readers' expectations for structures in stories. One was that a few older children produced flashbacks and concurrent episodes that could not easily be addressed by the current grammar. The other result was that interjections (unclassifiable statements) were frequent in the protocols and a cursory examination of them suggested some patterns of occurrence. Interjections in the protocols were coded according to type and placement within the scored response. The classifications are shown in the headings of Tables 7 and 8. The tallies in Tables 7 and 8 are combined across

Tasks 1 and 2. The tallies show a tendency towards production of more interjections in the higher grades, with the tally for eleventh graders being especially high. Second, some of the interjections are clearly statements of a Simple Reaction and/or Goal type, but the majority are unclassifiable. Third, interjections occurred in every category, and the largest number was given for the Attempt node. Fourth, for the overall tally, the most frequent placement of interjections was before the next node given; this statement did not hold for every category, however. It is possible that interjections represent nothing more than "noise" in the protocols, but it is also possible that they serve a systematic function, which if understood, would provide finer insight into readers' expectations for stories.

Insert Tables 7 and 8 about here.

(2a) Are there developmental differences in the degree to which readers expect particular structures in stories?

Both the proportion analyses and the repeated measures analyses of variance for Tasks 1 and 2 showed that third graders gave responses that matched the grammar less frequently than did sixth and eleventh graders, and there were no differences between sixth and eleventh graders in the extent to which responses matched the predictions of the grammar. (See Tables 1, 5, 9.) This finding is in accord with prior story grammar research using memory tasks (and for the most part, listening presentation modes), where younger children seemed to use the postulated schema to a lesser extent than older children and adults.

Insert Table 9 about here.

The presence of a developmental difference in the extent to which readers expect structural regularity in stories may be related to increasing experience with stories over time. It is possible that the effect of experience is simply a result of incidental learning through repeated exposures to stories. It is also possible that the development of a set of expectations for story structures is more directly an effect of teaching. Generally, at the middle school level and above, teachers tend to be increasingly concerned with pointing out and discussing structural aspects of stories, character development, and themes. Such discussions may be important to developing story schemata.

(2b) Are there developmental differences in the nature of readers' structural expectations for stories?

Qualitative differences in expectations between grades were very minor. Table 1 shows that for the proportion of times responses matched the category predicted by the grammar, there were fairly consistent patterns of responses across grades. Also, there were no interactions of grade with conditions and/or stories in the repeated measures analyses of variance. (See Table 5.) These results are in keeping with most of the findings of story grammar research using memory tasks. They differ from Mandler and Johnson's (1977) results in which an ordinal age by node interaction was found.

There were a few hints at small qualitative grade differences in readers' expectations. As already mentioned, there was a tendency for eleventh graders to produce increasingly complex forms of Outcome and Ending nodes and to give more partially correct responses for Complex Reactions (see Tables 3 and 4); and a few sixth and eleventh graders gave quite elaborate flashback story forms in Task 1.

Limitations

The findings of this research should be considered in light of several limitations. Most of the limitations pertain to the stories used in the study. They were very simple, and all were either folktales or modeled after folktales, making the stimuli a restrictive genre. Also, there was no attempt to control length of nodes, word frequency, imagery value, or interest of the stories. It was decided that controlling for these factors would render the stories less representative of typical stories. However, any of these variables might represent confounding factors.

Another drawback in this study was that in order to make developmental comparisons, the same stories were used for all three age groups. One concern was that the eleventh graders might be embarrassed to do the tasks because the stories were extremely simple. During data collection, many of the high school students did seem to feel awkward and uncomfortable, but specific statements in the task directions, such as "These are very simple stories, and you might feel silly doing them," helped to alleviate this situation somewhat.

Another limitation is that the extent of the validity of the procedures used in the study has not been firmly established empirically. For this study, a wide range of conditions for observation of readers' expectations for stories was considered. Options included: eye movement techniques, summarization tasks, recalls, importance ratings, sorting tasks, and telling what is wrong with non-canonical stories. The process of considering a wide range of measurements helped to insure the initial logical validity of the two tasks chosen for this study (cf., Cronbach, et al.). However, this study is only a first attempt to define appropriate measures for readers' expectations for story structures, and the validity of the procedures has not yet been assessed in a total measurement development program. Until such a program has been accomplished, the inferences

drawn from the present research are subject to prior acceptance of the logical validity of the tasks; i.e., one must believe, prima facie, that readers' predictions of parts of stories are accurate manifestations of their cognitive expectations.

Summary and further implications

Four major conclusions were drawn. (1a) Individuals' responses could be well accounted for the theory that readers do indeed use a set of rules for expecting particular structural elements and sequences of elements in simple stories. (1b) The Mandler and Johnson story grammar could aptly describe average and above average readers' expectations for story structures. (2a) There were developmental differences in the extent to which good readers employed a set of expectations for reading stories; third graders tended to expect particular structures less frequently than did sixth and eleventh graders. (2b) Differences were minor between grades in qualitative use of the schema as a set of expectations for story structures; i.e., students at each grade level appeared to use the same schema.

These results paralleled findings from other research on structural features of text when memory and listening tasks were involved. The same set of rules for story structures can account for readers' expectations and listeners' and readers' memory for and/or understanding of stories. One finding from this study suggested small possible differences between individuals' expectations when reading, and listeners' and/or readers' use of story schemata during and/or after text processing. In the present study, the only overall differential saliency for story parts occurred between the Reaction category and all others. In several prior studies, researchers found rank orderings of salience for all categories. The significance of the minor divergent findings in the present study is not clear, but it may lend insight into different functions of schemata for discourse at different points in time.

The main importance of the study is that it specifically focused on individuals' expectations, and it used reading tasks. Since memorial factors were not involved, the results can be more directly attributed to individuals' predictive abilities. Due to the specific nature of the tasks, the data provide strong support for a broadened view of the concept of reading strategy.

Also of significance, the two tasks used in the present study appear to be viable measurement techniques for assessing readers' structural predictions for stories. In the future, they might be refined to function as "miscue analysis" techniques for structures in stories. Such techniques could advance our understanding of the reading process. But before measurement techniques for readers' structural expectations are further developed and refined for the practitioner's use, an important prior question needs to be addressed--Is structural predictive ability related to reading achievement? If there are no differences between good and poor readers in structural expectations for text, then there would appear to be little practical importance in assessing structural expectations. There is currently some minimal evidence that individual differences in reading achievement may be more directly attributed to processing word level units rather than to sensitivity for global textual organization (cf., Perfetti and Lesgold, 1977). The existing limited amount of research, however, has not specifically probed readers' structural expectancies for stories, and the practical utility of a miscue analysis technique for text structures presently remains quite conceivable.

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Footnotes

[1](On cover sheet.)

[2]Interested persons may obtain a detailed description of the rules from the author.

[3]Details for estimating these reliabilities may be obtained from the author.

[4]The additional scoring rules may be obtained from the author.

[5]Details for estimating these reliabilities may be obtained from the author.

[6]In the remainder of this paper, conditions are labeled using the category title for responses predicted by the grammar.

Table 1

Proportion of Times Responses Matched the Predictions

Condition	Grade			Marginal Proportion
	3 (N)*	6 (N)	11 (N)	
		Task 1		
Beginning	.67 (30)	.90 (30)	.72 (36)	.70
Reaction	.00 (30)	.10 (30)	.17 (30)	.09
Attempt	.73 (30)	.90 (30)	.91 (33)	.85
Outcome	.87 (30)	.93 (30)	.90 (30)	.90
Ending	.87 (30)	.91 (33)	.97 (27)	.91
Marginal Proportion	.59	.75	.73	(.69)
		Task 2		
Setting	.60 (30)	.77 (30)	.85 (33)	.74
Beginning	.67 (30)	.90 (30)	.85 (33)	.81
Reaction	.03 (30)	.00 (33)	.00 (27)	.01
Attempt	.67 (30)	.77 (30)	.89 (36)	.78
Outcome	.90 (30)	.93 (30)	.93 (27)	.92
Marginal Proportion	.57	.67	.72	(.65)

* Total number of instances observed.

Table 2

Proportion of Times Responses Matched the Predictions for Constituents of the Reaction Category

Task 1 (Task 2)				
	Grade			Constituent Marginals
	3	6	11	
Simple Reaction	.10 (.03)	.27 (.00)	.43 (.15)	.27 (.07)
Goal	.20 (.10)	.20 (.03)	.40 (.22)	.27 (.12)
Grade Marginals	.00 (.03)	.10 (.00)	.17 (.00)	

Table 3

Tally of Classification of Scored Responses for Task 1

Category Given	Condition															
	Beginning			Reaction			Attempt			Outcome			Ending			
	Grade															
	3	6	11	3	6	11	3	6	11	3	6	11	3	6	11	
Other *	9	3	8	2	1	1	4	2	3	3		1	4	2		
Beginning, Simple Statements	20	27	26													
Simple Reaction Followed by Goal			2		3	6										
Simple Reaction Only				2	5	5										
Goal Only				5	3	5										
Goal Followed by Simple Reaction				2		2										
Attempt, Simple Statements	1			16	14	7	17	21	23				1			
Attempt, A Minor Episode									1							
Attempt, Then Repeated Development				3	4	4	5	5	6							
Outcome, Simple Statements							2	1		14	14	11				
Outcome Expressed as an Episode										5	6	4				
Outcome Expressed as an Episode with One or More Embedded Episodes in It										1	1					
Outcome Followed by Repeated Development										6	7	11				
Ending, Simple Statements										1	1	1	18	14	11	
Ending, Expressed as an Episode												1	4	9	10	
Ending Expressed as an Episode with One or More Embedded Episodes in It											1			1		
Repeated Development, then Ending														6	4	
Repeated Development, then Ending as an Episode with Embedded Episodes in It													1			
Elaborated the Given Outcome, then Gave Ending													1	1	1	
Repeated Development, No Attempt Initially							2	1								
Repeated Development, No Ending at End													1		1	

* The form called "Other" consisted of classifications such as: (1) No Response or Only Reread Parts of the Story; (2) Only Extended the Category (ies) Read in the Stimulus Material; and (3) Just Gave a Series of Descriptive Statements.

Table 4

Tally of Classification of Scored Responses for Task 2

Category Given	Condition											
	Setting			Beginning			Reaction			Attempt			Outcome		
	Grade			Grade			Grade			Grade			Grade		
	3	6	11	3	6	11	3	6	11	3	6	11	3	6	11
Other*	11	7	5	9	3	1	26	30	17	9	7	4	5	2	2
Setting, Simple Statements	16	23	28												
Beginning, Simple Statements				20	24	31									
Beginning, Expressed as an Episode					3	1									
Simple Reaction followed by Goal							2								
Simple Reaction Only									4						
Goal Only				1			1	3	6						
Attempt, Simple Statements										16	20	23			
Attempt, a Minor Episode											1	5			
Attempt, then Repeated Development										4	2	4			
Outcome, Simple Statements													22	18	11
Outcome, Expressed as an Episode													3	6	11
Outcome, Expressed as an Episode with One or More Embedded Episodes in It															1
Outcome, as an Episode, Followed by Repeated Development														1	
Outcome Followed by Repeated Development														3	2
Repeated Development, No Attempt Initially										1					
Repeated Development, No Simple Reaction Initially							1								

* The form called "Other" consisted of classifications such as; (1) No Response or Only Reread Parts of the Story; (2) Only Extended the Category (ies) Read in the Stimulus Material; and (3) Just Gave a Series of Descriptive Statements.

Table 5

Results of Repeated Measures Analyses of Variance*

Source of Variance	Task 1		Task 2	
	F	p<	F	p<
Grand Mean	--	--	--	--
Grade	4.6635	.0110	6.1209	.0029
Condition	45.1280	.0001	51.2168	.0001
Grade x Condition	.9829	.4521	.5237	.8372
Stories	5.1584	.0070	4.4849	.0130
Grade x Stories	.4484	.7736	1.7209	.1456
Condition x Stories	2.7487	.0063	2.7907	.0056
Grade x Condition x Stories	1.3807	.1505	1.1698	.2921

*Where necessary, effects were reordered to test significance above and beyond other significant effects.

Table 6

t Statistics for Planned Contrasts for Conditions*

Contrast	Task 1	Task 2
	t	t
Setting-Reaction	--	10.1411
Beginning-Reaction	3.1444	11.1868
Attempt-Reaction	3.6182	10.7699
Outcome-Reaction	3.9333	12.4273
Ending-Reaction	4.0108	--

*All probability levels were less than .0001.

Table 7

Tally of Type of Interjection for Tasks 1 and 2 Combined*

Grade	Type of Interjection			
	a Simple Reaction and/or Goal	b Other	c Both a and b	Total
3	5	26	--	31
6	8	26	4	38
11	16	35	13	64
Total	29	87	17	(133)

*Interjections were tabulated only for the response used for scoring, regardless of whether the response matched the prediction or not.

Table 8

Tally of Placement of Interjections for Tasks 1 and 2 Combined*

Condition	Interjection Occurred Before the Next Node Given	Interjection In Middle of Next Node Given	Interjection At End of Next Node Given	Interjection Only	2 or More Placements of Interjections	Total
Beginning		6	9			15
Reaction	6	3	8		1	18
Attempt	21	13	12	3	6	55
Outcome	18	7	5			30
Ending	6	8		1		15
Total	51	37	34	4	7	(133)

* Interjections were tabulated for the response that was used for scoring, regardless of whether the response matched the prediction or not.

Table 9

Mean Total Scores and t Statistics for Planned Contrasts for Grades

Grade	Mean Total Score		Contrast	Task 1		Task 2	
	Task 1	Task 2		t	p <	t	p <
3	6.92	6.40	3-11	-2.6988	.0078	-.9919	.0010
6	7.65	7.12	6-11	- .0082	.9935	-.2792	.3453
11	7.65	7.40	3-6	not necessary to calculate		-.7127	.0100

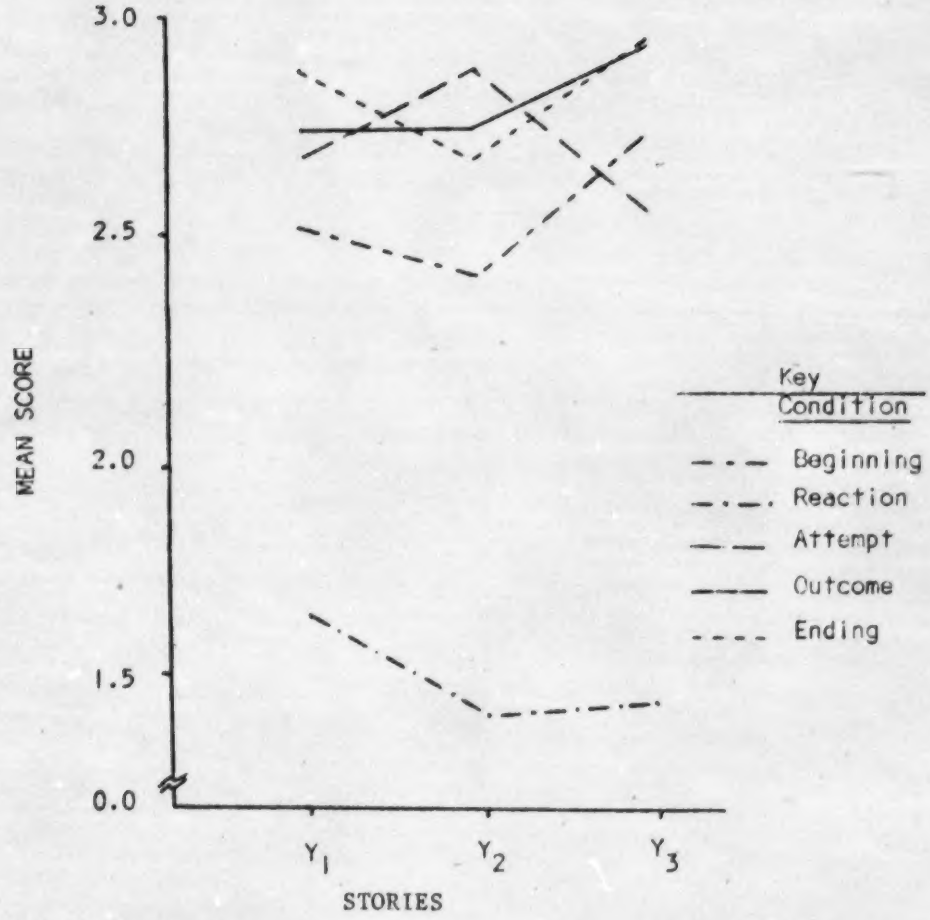

Figure 1. Condition by stories interaction for Task 1.

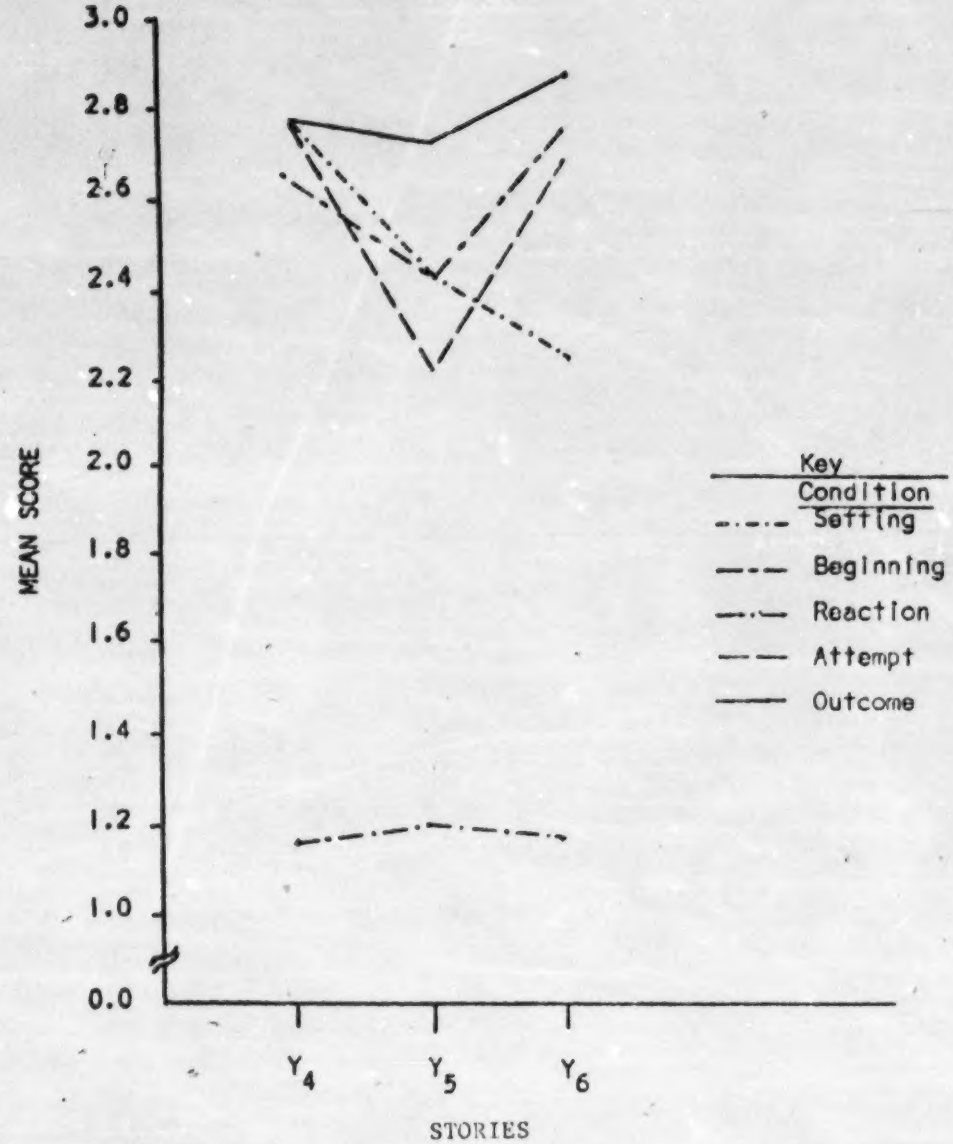

Figure 2. Condition by stories interaction for Task 2.

Appendix A: Summary of Major Story Grammar Rules*

Rewrite rules for the base structure of simple stories

Rules

STORY → Setting And EPISODE

EPISODE → [BEGINNING Cause DEVELOPMENT Cause ENDING / EPISODE ([And / Then] EPISODE)^{n}]

BEGINNING → [Beginning Event / EPISODE]

DEVELOPMENT → [COMPLEX REACTION Cause GOAL PATH / Simple Reaction Cause Action / DEVELOPMENT (Cause DEVELOPMENT)^{n}]

COMPLEX REACTION → Simple Reaction Cause Goal

GOAL PATH → Attempt Cause OUTCOME

OUTCOME → [Outcome Event / EPISODE]

ENDING → [Ending Event / EPISODE]

State* → State ((And State)^{n})

Event* → Event ((And / Then / Cause) Event)^{n}) ((And State)^{n})

*Appendix A is abstracted from Mandler and Johnson (1977) and Johnson and Mandler (in press).

Notational conventions

Nonterminal nodes are written in upper case.

Terminal nodes and nodes which are not rewritten except to State* or Event* are written in lower case.

Items within parentheses represent optional expansions of a node.

Superscript "n" means the parenthetical item occurs one or more times.

Items within brackets are mutually exclusive items; either may occur in that node, but only one may occur at a time.

An asterisk means one or more may occur. E.g., Event* means one or more Events may occur.

An arrow means "can be rewritten as."

Predicate notation is used for writing selection restrictions.

Definitions of simple story categories and selection restrictions** governing their content

Story categories

Setting = State* | State* introduces protagonist of first Episode, including optional statements about time, locale, or props

Beginning Event = Event* | Event* causes protagonist to react

Simple Reaction = Event* | Event* represents protagonist's emotional response or thoughts caused by BEGINNING

Action = Event* | Event* represents nonplanful act(s) by protagonist caused by Simple Reaction

Goal = State* | State* represents what protagonist plans to do about BEGINNING

Attempt = Event* | Event* represents planful act(s) protagonist carries out to achieve Goal

Outcome Event = Event* | Event* represents either success of failure of Attempt

Ending Event = Event* | Event* represents long range consequences or DEVELOPMENT or response by story character to DEVELOPMENT or emphatic statement of or about consequences

**Selection restrictions, as used by Johnson and Mandler (in press), are statements that govern the content of simple story categories and that express the conditions under which various types of Episode-embedding occur.

States and events

A State may be external, i.e., a current condition of the world, or it may be internal, i.e., an emotion or state of mind.

An Event is any occurrence or happening. It may be external. Actions of characters and changes of state in the world are external Events. An Event may also be internal. Thoughts and plans, perceptions, and such peculiar phenomenon as forgetting are internal events.

Appendix B

The Camel Trader*

1 Once there was a camel trader named Abdu

2 who heard a story about great riches hidden in the desert.

3 Abdu longed to be rich himself

4 and made up his mind to have the treasure.

5 After many months of looking,

6 he found more gold than a hundred camels could carry.

7 So he loaded his camel with sacks and sacks of gold,

8 but there were still many many bags of gold left.

9 Abdu could not stand to leave any gold behind

10 so he piled it higher and higher on the camel.

11 But the gold was so heavy

12 it broke the camel's back so he could not carry even one piece of gold.

13 Abdu returned home with nothing.

Estimate of readability, 3.4

*This is a self-devised story.